

87. (TWICE AMENDED) The system of claim 86 wherein the shoes are formed of a metal extrusion having an evenly extending profile.

88. (TWICE AMENDED) The system of claim 86 wherein the sash support arms are formed of a metal extrusion having an evenly extending profile.

89. The system of claim 88 wherein a plurality of extrusions are made in different lengths to bridge different distances between stiles of the sash and the support regions.

90. (TWICE AMENDED) The system of claim 86 wherein the shoes have platforms extending upward and toward the sash from sash weight support regions engaged by the support arms.

## REMARKS

The amended claims distinguish from the art as cited and applied against predecessor claims in the parent application, as explained in the following synopsis of the claims.

### Claim 1

The Osten '758 support arms are spring biased outward and therefore do not hang freely downward as claimed. Since springs bias the Osten support arms constantly outward, these arms do not move outward as a sash is lowered between locked shoes as claimed. Nor do the Osten support arms move outward in response to sash lowering engagement between the arms and shoe platforms. The Osten sash support arms also do not engage shoe platforms in positions vertically under counterbalance elements as claimed, but intentionally engage shoes in regions offset from counterbalance elements. This places a cantilevered load on the sash shoes, which Osten requires for shoe locking and which the claimed arrangement avoids.

**Claim 2**

The references do not suggest sash supporting platforms that have inner regions engaging downwardly hanging sash support arms and outer regions engaging sash support arms in outwardly extended positions, as claimed.

**Claim 3**

Neither reference suggests counterbalance elements connected to shoes vertically above outer platform regions, as claimed.

**Claim 4**

Neither reference suggests jamb projections or locking elements that lock to jamb projections as claimed, since both references suggest biting lock elements that engage smooth jamb surfaces lacking projections.

**Claim 5**

The locking elements of the cited references are deployed when sash weight is removed from a shoe; and when undeployed, the cited lock elements are not latched out of engagement with jambs as claimed.

**Claim 6**

Neither reference suggests that locking elements be hooks or that the hooks be extruded of metal.

**Claim 7**

Neither reference suggests that shoes and sash support arms be formed of metal extrusions having evenly extending profiles as claimed.

**Claim 8**

Since the references do not suggest forming shoes of extrusions, they also do not suggest forming shoes of different predetermined lengths of a shoe extrusion so that the shoes can vary in width as claimed.

**Claim 9**

The references do not suggest connecting shoes to different numbers of counterbalance elements or using shoes of different widths adapted for such connections as claimed.

**Claim 10**

Osten does not suggest extrusion of sash support arms, and the spring bore hole suggested for the Osten sash support arm is unextrudable. Osten also does not suggest sash support arms available in different lengths or using different extrusions to form such different lengths of sash support arms.

**Claim 11**

Although code markings to indicate part sizes are commonplace, the cited art contains no suggestion for extruding code lines on different lengths of support arms as claimed.

**Claim 12**

The references do not suggest sash shoes formed as extrusions and do not suggest shoe configurations that are extrudable. The references therefore fail to suggest an extrusion having a predetermined profile establishing an elevational configuration of a sash shoe. There is no precedent known to applicants in the sash counterbalance shoe art for forming a shoe as an extruded profile as claimed. Moreover, the prior art does not suggest integral shoes with sash support platforms extending toward a sash from directly below an upper shoe region formed to interconnect with

counterbalance elements as claimed. Shoe support platforms of the references are intentionally offset vertically from counterbalance elements, and the references teach that support for a sash should not be directly below counterbalance elements.

**Claim 13**

The Osten reference, which is the only one suggesting sash support arms, does not suggest that they be extruded or have an evenly extending profile and does not suggest a support arm configuration that can be extruded, since it lacks an evenly extending profile.

**Claim 14**

The references both teach against resting a sash or sash support arms vertically below an upper region of a shoe interconnected with counterbalance elements.

**Claim 15**

The Osten sash support arms do not assume the claimed downwardly hanging positions when not supporting a sash, since they are spring biased to their outward positions.

**Claim 16**

Neither reference suggests jamb projections engaged by shoe locking elements as claimed, and both references rely on biting locks.

**Claim 17**

Neither reference suggests locking elements formed of a metal extrusion.

**Claim 18**

The locking elements of the cited art are not formed as hooks, and these references do not suggest jamb projections that hooks can catch on. Nor do the references suggest latches that latch locking elements in undeployed positions, since the prior art locking elements are always biased into locking position and are deployed by removing sash weight from the shoe.

**Claim 19**

The references do not suggest an extruded shoe profile elevationally configuring a mid-region of a shoe to support a guide as claimed.

**Claim 20**

The references also do not suggest an extruded shoe profile elevationally configuring a groove to retain a guide.

**Claim 21**

The references lack any suggestion for an extruded shoe profile elevationally configuring a latch retaining groove for a latch and a pivot pin retaining groove for a hook.

**Claim 22**

The references do not suggest shoes formed of predeterminedly variable lengths of an extrusion.

**Claim 23**

The references do not suggest shoes of different widths having upper regions adapted to interconnect with different numbers of counterbalance elements as claimed, since the art suggests only a single counterbalance element for each shoe.

**Claim 24**

The references do not suggest sash support arms available in different evenly extending lengths from different metal extrusions.

**Claim 25**

Neither reference suggests that code indications of size of support arms be extruded.

**Claim 29**

No cited reference suggests a metal extrusion having an evenly extending profile establishing an elevational configuration of a sash shoe. The references further fail to suggest that any such elevational configuration extending integrally downward from an upper region of the shoe formed to interconnect with a counterbalance to a lower region of the shoe formed as a platform to support a sash as claimed. For lack of suggesting that a sash shoe be made from an extrusion, the art also fails to suggest that such a shoe have a width established by a predetermined length of the extrusion.

**Claim 30**

The references do not suggest a locking hook mounted on a sash shoe. The locking mechanisms that the references do suggest are always biased toward deployment and do not hang downward from a shoe when deployed to an operative position as claimed.

**Claim 31**

The references do not suggest forming shoe lock hooks of a metal extrusion having an evenly extending profile as claimed.

**Claim 32**

The references do not suggest a locking element that is latched in an inoperative position and do not suggest a spring latch that holds a locking hook in an inoperative position. Springs in the referenced locking mechanisms do not latch, but bias the locks into jamb engagement.

**Claim 33**

The references do not suggest a shoe locking hook that is manually latchable or unlatchable by pressing between the end of a hook and a spring latch as claimed.

**Claim 34**

The references do not suggest an extruded shoe profile configured with a pivot pin groove or a spring groove for respectively receiving a pivot pin and a spring latch.

**Claim 35**

The references do not suggest a resin guide mounted on a mid-region of an extruded shoe as claimed.

**Claim 36**

The references do not suggest an extruded shoe profile elevationally configuring a mid-region interlock for holding a guide as claimed.

**Claim 37**

The references do not suggest shoes of different widths set by different predetermined lengths of a shoe extrusion having an evenly extending profile as claimed.

**Claim 38**

The references do not suggest adapting a shoe for connection to different numbers of counterbalance elements as claimed.

**Claim 39**

The references do not suggest that each of a plurality of sash support elements be formed of a metal extrusion having an evenly extending profile establishing an elevational configuration. Neither reference suggests an extrusion profile elevationally configuring an integral shoe having an upper region engaging a counterbalance and a lower region supporting a sash as claimed. Instead, the shoes of the cited art are not integral and are not configured to be extrudable. Although Osten suggests sash support arms, he does not suggest that they be formed of an extruded element having an evenly extending profile forming an elevational configuration. The support arms he does suggest have spring recesses that are not extrudable. Osten also does not suggest a combination of a sash shoe and a sash support arm that are each formed of an extrusion having an evenly extending profile as claimed.

**Claim 40**

Neither reference suggests a third extruded element having an evenly extending profile establishing an elevational configuration of a shoe lock as claimed.

**Claim 41**

Neither reference suggests an extruded shoe profile configuring a pin groove for a pivot pin for a shoe lock as claimed.

**Claim 42**

Neither reference suggests a shoe lock that is latched in an undeployed position, and neither reference suggests a resilient latch for a shoe lock as claimed.



**Claim 43**

Neither reference suggests a shoe lock that is manually latchable and unlatchable, since neither reference suggests a latchable lock.

**Claim 44**

Neither reference suggests a shoe lock that is downwardly dependent from the shoe when deployed as claimed.

**Claim 45**

Neither reference suggests a resin guide mounted on an extruded metal shoe as claimed.

**Claim 46**

Neither reference suggests an extruded shoe profile elevationally configuring a locking slot for a resin guide as claimed.

**Claim 47**

The Osten sash support arms do not hang downwardly when not supporting a sash, because they are constantly biased to outward positions.

**Claim 48**

Osten does not suggest support arms braced against movement beyond downwardly hanging positions.

**Claim 49**

Neither reference suggests shoes of different widths established by different predetermined lengths of a shoe extrusion as claimed.

**Claim 50**

Neither reference suggests shoes of different widths adapted for connection to different numbers of counterbalance elements as claimed.

**Claim 51**

Osten does not suggest extrusions of different profiles establishing different lengths for sash support arms as claimed.

**Claim 52**

Neither reference suggests extruded code lines indicating different support arm lengths.

**Claim 53**

Osten does not suggest sash support arms that hang downward in dependent positions when not supporting a sash. Neither does Osten suggest sash support arms that move from inward to outward positions in response to lowering the sash between locked shoes so that the support arms engage the shoes and the weight of the lowered sash urges the support arms outward on the shoes to brace positions as claimed. In contrast, Osten's sash support arms are constantly biased outward. Furthermore, neither Osten nor Haas suggest support arms resting on sash shoes vertically under counterbalance elements, as claimed. Both references deliberately offset the sash weight support from the counterbalance element to pivot the sash shoe for jamb locking purposes.

**Claim 54**

Mounting brackets for the Osten sash support arms do not limit movement beyond downwardly hanging positions, as claimed.

**Claim 55**

The references do not suggest extruded metal shoes having an evenly extending profile forming upper regions connected to counterbalance elements as claimed.

**Claim 56**

Osten shoe support regions do not engage support arms in downwardly hanging positions when a sash is lowered, as claimed.

**Claim 57**

The Osten support arms do not move from inward to outward by sliding along shoe support regions as a sash is lowered, as claimed.

**Claim 58**

Osten's suggestion for sash support arms is inconsistent with formation of a metal extrusion, as claimed.

**Claim 59**

Osten does not suggest or have any need for extruded support arms having different lengths and provided with extruded coding lines, as claimed.

**Claim 60**

Neither reference would lead an ordinary worker to form a shoe of a metal extrusion having an evenly extending profile as claimed.

**Claim 61**

Although each reference suggests locking devices, neither locking device is a hook. The references also do not suggest locking devices that are latched and unlatched, since each locking device is

constantly biased toward a locking position. Neither reference suggests that locking hooks hang downwardly from shoes to engage jambs and hook under lances formed in the jambs as the shoes rise. In contrast, each reference suggests locks that bite into smooth jamb surfaces. Neither reference suggests hooks that can be latched in positions clear of the jambs and jamb lances, since the locking devices suggested are not hooks, are not latchable, and are not involved with jamb lances.

**Claim 62**

Neither reference suggests resilient latches for latching shoe locking hooks as claimed.

**Claim 63**

Neither reference suggests locking hooks that are manually movable to latched positions. Nor do the references suggest unlatching locking hooks by pressing between ends of the hook and the latch as claimed.

**Claim 64**

Neither reference suggests extruding shoes and shoe locking hooks of metal having evenly extending profiles as claimed.

**Claim 65**

Neither reference suggests extrusion formed grooves in shoes to receive pivot pins for locking hooks as claimed.

**Claim 66**

Neither reference suggests extrusion formed slots in shoes for retaining latches for locking hooks as claimed.

**Claim 67**

Osten does not suggest sash support arms that hang downward in positions that engage sash end regions of shoe platforms when a sash is lowered. The Osten support arms are spring biased outward as the sash is lowered. The Osten sash support arms do not move from downwardly hanging to outwardly extending positions as the weight of a downwardly moved sash transfers to the shoes via the support arms, and the Osten counterbalance elements do not exert a lifting force vertically above the jamb end regions of the shoe platforms as claimed. Instead, the Osten shoe platforms bear sash weight offset from the counterbalance elements to rotate the shoe platforms for locking purposes.

**Claim 68**

The Osten support arms do not slide downward over steps in the shoe platforms as the support arms move from inward to outward as claimed.

**Claim 69**

The Osten support arms are not braced against movement beyond downwardly hanging positions as claimed.

**Claim 70**

Nothing in Osten or the other references would lead to support arms formed of a metal extrusion having an evenly extending profile as claimed.

**Claim 71**

Osten does not suggest different extrusion lengths for different lengths of support arms as claimed.

**Claim 72**

Osten does not suggest extruding code lines on different extrusions of support arms to indicate different lengths as claimed.

**Claim 73**

Neither reference suggests that sash shoes be formed of a metal extrusion having an evenly extending profile as claimed.

**Claim 74**

Neither reference suggests sash support arms transferring sash weight to the shoes at regions vertically below lifting regions to minimize any moment arm tending to turn the shoes around a horizontal axis. Both references offset the sash load deliberately to rotate the shoes around a horizontal axis. A sash supported directly below a counterbalance lifting region would interfere with the lifting region when the sash is raised from the shoes. The references avoid this problem by supporting the sash in a region offset from the lifting region, and neither reference suggests support arms that are movable or that hang downward to avoid interference between the support arms and the lifting region when the sash is lifted from shoes.

**Claim 75**

Osten does not suggest support arms that hang downward when not transferring sash weight to the shoes as claimed.

**Claim 76**

Neither reference suggests shoes formed of a metal extrusion having an evenly extending profile as claimed.

**Claim 77**

Neither reference suggests sash support arms formed of a metal extrusion having an evenly extending profile as claimed.

**Claim 78**

Neither reference suggests different lengths of sash support arms or different extrusions forming different lengths of sash support arms as claimed.

**Claim 79**

The references do not suggest shoe platforms extending from support regions toward the sash to engage support arms hanging downward from the sash being lowered.

**Claim 80**

Neither reference suggests counterbalance shoes biased upward vertically above support regions bearing sash weight to minimize any moment arms tending to turn the shoes around horizontal axes as claimed. The references suggest to the contrary that the sash weight rotate the sash shoes around horizontal axes. The references also do not suggest support arms that extend outward to support regions under counterbalance lifting regions, but are movable to allow upward and lateral movement of the sash between the lifting regions as claimed. The references do not suggest support arms that reach outward far enough to be under lifting regions in the first place, and inward movement of support arms is not necessary to the reference suggestions for lateral movement of the sash within the lifting regions.

**Claim 81**

Osten does not suggest support arms that move in response to being subjected or not subjected to sash weight as claimed. Osten's

arms are spring biased outward and do not move in response to sash weight.

**Claim 82**

Neither reference suggests shoes formed of a metal extrusion having an evenly extending profile as claimed.

**Claim 83**

Neither reference suggests sash support arms formed of a metal extrusion having an evenly extending profile as claimed.

**Claim 84**

Neither reference suggests different lengths of sash support arms or forming these of different extrusions as claimed.

**Claim 85**

Neither reference suggests sash support arms that move inwardly toward the sash when the sash is lifted from the shoes as claimed.

**Claim 86**

Osten does not suggest sash support arms that hang downward from the sash stiles as claimed. Lateral movement of the Osten sash is not affected by the sash support arms and does not require that they hang dependently from the sash stiles. Neither reference suggests that the sash weight not subject the shoes to moment arms tending to turn the shoes about horizontal axes as claimed; instead, both references suggest the contrary.



**Claim 87**

The references do not suggest forming sash shoes of a metal extrusion having an evenly extending profile as claimed.

**Claim 88**

The references do not suggest forming sash support arms of a metal extrusion having an evenly extending profile as claimed.

**Claim 89**

The references do not suggest different lengths of support arms or different extrusions to form such different lengths as claimed.

**Claim 90**

Osten does not suggest shoe platforms extending upward and toward the sash from the sash weight support regions engaged by the support arms.

Consideration and allowance of all pending claims 1-25 and 29-90 are respectfully requested. For any question on this application, the Examiner is invited to call applicants' attorney.

Respectfully submitted,  
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